

Evaluation of Foliar Fertilizers for Delaying Flowering in Soybeans

Objectives

This trial is designed to look at the effect of using different foliar fertilizer applications to delay and trigger flowering in soybeans. The intent is to allow more time for vegetative growth prior to flowering which could result in increased yields.

Background

Soil Type:	Hoytville Clay	Roundup OriginalMax at 22 oz/A + 2,4-D LVE6 at 10oz/A
Drainage:	Tile- systemic	+ AMS at 17lb/100 gal
Previous Crop:	Corn	POST: Glyphomax XRT at 1.5 pt/A +
Tillage:	No-till	(June 30) AMS at 17 lb/100 gal
Soil Test (2005):	pH 6.7, P 30 ppm, K 158 ppm	Variety: Corn Belt Seed S314RR
Fertilizer:	350 lb/A 4-20-37 surface broadcast (January 2007)	Row width: 7.5 inches
Herbicide:		Planting Rate: 215,000 seeds/A
PREPLANT:	Authority First at 3.2 oz/A +	Planting Date: May 16, 2007
(May 8)	Aim EW at 1.0 oz/A +	Harvest Date: October 6, 2007

Methods

This study was set up with two treatments replicated six times in a randomized complete block design. The treatments consisted of an untreated check and a foliar applied fertilizer program. The foliar fertilizer treatment consisted of spraying the plots with a 10-0-8 fertilizer blend at 2.5 gallons per acre at V5 soybean growth stage (June 30). Three weeks later the same plots were treated with a 12-8-4 fertilizer blend at 2.5 gallons per acre at R3 soybean growth stage (July 22). Both blends also contained 3 ounces of 10% boron, 1 pint of manganese EDTA, and 1 pint sugar. Each of these foliar blends were mixed with water and applied with a ground sprayer in 15 gallons per acre total spray volume at 40 psi boom pressure using wide angle flat fan turbo tee jet nozzles (TT11002) on 15 inch spacings. The first foliar fertilizer treatment was combined with the post emergence herbicide application. The second foliar treatment was a stand alone application. Plot size was 45' wide (one sprayer pass) by 1025' in length.

The field where this trial was conducted is equipped with a subsurface irrigation system. This system was used to supply additional water to the soybean plants during the growing season.

Harvest populations (October 2) were estimated by counting the number of plants in the row on each side of a 10 foot section at three different locations in each plot. The average number of plants counted per 10 feet was converted to plants per acre. Harvesting was accomplished with a John Deere 6620 combine equipped with a calibrated AgLeader PF3000 yield monitor. Plot weights were determined with a calibrated weigh wagon. Moistures were taken from the combine yield monitor. All yields were adjusted to 13% moisture.

Results

Table 1. Harvest population, moisture, and yield means for each treatment.

Treatment	Harvest Population	Moisture	Yield
Untreated check	(plants/A) 146,900	(%) 11.8	(bu/A) 64.6
Foliar Fertilizer Program	147,700	11.7	67.6
LSD (P=0.05)	NS	NS	1.7
F-test	<1	3.2	20.3
CV (%)	7.9	<1	1.74

NS= not significant

Summary

The results from this one year trial show a statistically significant yield difference between the untreated check and the foliar fertilizer program. There were no statistical differences between treatments for harvest population or moisture. The costs for the foliar fertilizer blends used in this study were \$8.92/acre for the 10-0-8 blend and \$10.08/acre for the 12-8-4 blend. The total cost including \$6.00/acre for application (first application was made with postemergence herbicides) would be \$25.00/acre. Using a harvest price of \$9.50/bushel for soybeans, there would be a \$3.50/acre net return using the average 3 bushel/acre yield increase realized in this study.

P & L Fertilizer, the company that promotes the foliar fertilizer program used in this trial, claims that foliar fertilizer high in potassium applied to soybeans just prior to flowering can delay flowering, thus leading to increased vegetative growth. P & L Fertilizer's preferred fertilizer blend for delaying blossom is liquid 3-0-20, but an error was made when making the blend resulting in 1 gallon/acre of liquid urea being added to the blend. This produced the 10-0-8 foliar fertilizer used to delay blossom in this trial. The second application of fertilizer high in phosphorus and nitrogen is supposed to help to trigger flowering after the delay, thus leading to more potential nodes/pods and increased yields. For more information on the fertilizers used in this study, contact P & L Fertilizer at (419) 968-2230.

Acknowledgement

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